



A-8190/8170

Integrated Stereo Amplifier

Integrierter Stereo-Verstärker

Amplificateur stéréo intégré

Amplificador Estereofónico Integrado

Geïntegreerde stereoversterker

Integrerad stereoförstärkare.

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- *Congratulations on your purchase of the ONKYO A-8190/8170 Integrated Amplifier.*
- *Please read this manual thoroughly before making connections and turning power on.*
- *Following the instructions in this manual will enable you to obtain optimum performance and listening enjoyment from your new A-8190/8170.*
- *Please retain this manual for future reference.*

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Features

● Plenty of Clean Power

A-8190: 100 watts per channel into 8 ohms with no more than 0.008% total harmonic distortion. (2 x 303 watts at 2 ohms dynamic power)

A-8170: 80 watts per channel into 8 ohms with no more than 0.008% total harmonic distortion. (2 x 224 watts at 2 ohms dynamic power)

● CD Direct Switch

Onkyo's "direct in" design philosophy, which aims at keeping the signal path as short and unencumbered by unnecessary tone controls as possible, is fully in evidence in the A-8190/A-8170. All of the input signals benefit from the ingenious circuit design which cuts the number of switches in the signal path to an absolute minimum. In addition, the "CD Direct" switch bypasses all of the preamp section's tone control circuitry and switches including the common volume control and input selector. The CD player's output signal is routed through its own fourgang volume control separate from that used by the other components and then straight into the power amp section.

● Video Input Capability

The A-8190/A-8170 comes with two video inputs (video disc player and VCR) and one video output for a TV monitor. The video signal path is entirely separate from the audio circuitry and is all located as close to the video input/output pin jacks as possible so as not to cause interference. To keep the picture sharp and clear, no video amplifier is used.

● Signal In-Phase Filters

The purpose of these filters is to prevent unwanted sonic colorations and interference, whether with analog or digital sources. They work by reducing common mode electrical noise while maintaining phase fidelity. This is achieved without resorting to increased negative feedback.

● Real Phase* Circuitry (A-8190)

Important safeguards

WARNING

"TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

CAUTION

"TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL."

- For models having power cords with a polarized plug.

"CAUTION":

"TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE."

ATTENTION

FOR BRITISH & EUROPEAN MODELS

WHEN REPLACING OR MOUNTING THE AC PLUG ON THE POWER SUPPLY CORD OF THIS UNIT:

- Replacement and mounting of an AC plug on the power cord of this unit should be performed only by qualified service personnel.
- **IMPORTANT:** The wires in this mains lead are coloured in accordance with the following code:
 Blue: Neutral
 Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

Observe the following precautions to obtain troublefree performance for many years.

1. Avoid places subject to direct sunlight or extremely high or low temperatures.
2. Avoid damp or dusty places and places directly affected by vibrations from the speakers. In particular, avoid placing the unit on or above one of the speakers.
3. Avoid unstable locations and high places from which the unit could fall.
4. Ventilation — The unit should be situated so that its location or position does not interfere with proper ventilation. For example, the unit should not be placed on a bed, sofa, rug or similar surface that could block the ventilation openings or placed in a built-in installation, such as a bookcase or cabinet, that could impede the flow of air through the ventilation openings.
5. Heat — The unit should be situated away from heat sources such as radiators, heat registers, or other appliances (including amplifiers) that produce heat.
6. Cleaning of the internal parts should be performed only by qualified service personnel.

8. **Damage Requiring Service** – The unit should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped or the enclosure damaged.
9. **Servicing** – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.
- This apparatus complies with requirements of EEC directive 82/499/EEC.

Precautions

1. Warranty Card

The serial number is written on the rear panel of this unit. Copy the serial number and model number onto your warranty card and keep it in a safe place.

2. Recording Copyright

Recording of copyrighted material for other than personal use is illegal without permission of the copyright holder.

3. AC Fuse

The fuse is located inside the chassis and is not user serviceable. If power does not come on, contact your Onkyo dealer.

4. Care

From time to time you should wipe off the front and rear panels and the cabinet with a silicon or other soft cloth. For heavier dirt, dampen a soft cloth in a weak solution of mild detergent and water, wring it out dry, and wipe off the dirt. Following this, dry immediately with a clean cloth. Do not use rough material, thinners, alcohol or other chemical solvents or cloths since these could damage the finish or remove the panel lettering.

5. Power

WARNING

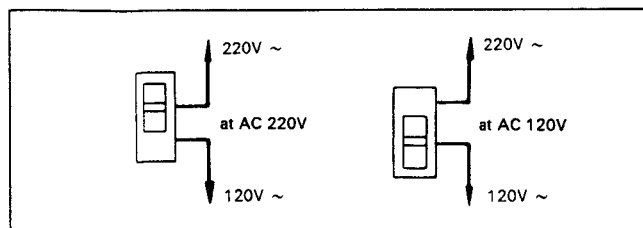
BEFORE TURNING ON POWER FOR THE FIRST TIME, READ THE FOLLOWING SECTION CAREFULLY.

- Some models are designed for use only with the power supply voltage of the region where they are sold.

European models:	AC220V, 50Hz
Canadian models:	AC120V, 60Hz
British & Australian models:	AC 240V, 50Hz
Worldwide models:	120 and 220V switchable, 50/60Hz

Voltage Selector (Rear Panel)

Worldwide models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on. Voltage is changed by sliding the groove in the switch with a screwdriver or similar instrument to the up or down position. Confirm that the switch has been moved all the way up or down before turning the power switch on. If there is no voltage selector switch on the unit you have purchased, it can only be used in areas where the power supply voltage is the same as that of the unit.



System connections

Do not plug in the power cord until all connections have been made.

General

On each pair of input or output jacks, the lower jack (marked R) corresponds to the right channel, and the upper jack (marked L)

to the left channel. When jacks on other equipment or connection cables are color-coded, the color red usually corresponds to the right channel (Red = Right). A pair of video jacks, indicated with V, is also provided. A video component should be connected here.

Turntable Connections

Be sure to connect the ground (earth) lead wire from the turntable to the ground terminal (GND). Lack of proper ground connection will cause hum. Also observe the following precautions.

- Place the turntable on a firm shelf or desk free from vibrations (especially those generated by the speaker systems). If the turntable is permitted to pick up such vibrations, not only will this unit's performance suffer, but distortion in the bass range and howling noise in the speakers may also occur.
- Check the turntable instruction manual for any other precautions.
- The loud noises that occur when connecting and disconnecting the turntable leads could damage the speakers. Always turn the power switch off before making connections.

Tuner Connections

Connect an FM/AM tuner to the tuner input terminals. Be sure the left and right channels are connected properly.

Compact Disc Player Connections

Connect a compact disc player to the CD input terminals. Be sure the left and right channels are connected properly.

Tape Deck Connections

Two tape decks can be connected at once to this unit. Connect the tape deck output leads to the PLAY jacks and the tape deck input leads to the REC jacks of this unit. For more details, refer to your tape deck owner's manual.

Video Component Connections

With a video component with the input and output capabilities, such as a video cassette recorder (VCR), you have to make connections with two sets of leads: Input and Output, each set consisting of Audio signal Left and Right leads, and a Visual signal lead. Connect the Audio Input Left lead of your VCR to the VCR REC L terminals of this unit, the Audio Right lead to the VCR REC R terminal, and the Video Input lead to the VCR REC V terminal.

Likewise, connect the Audio Output Left lead of your VCR to the VCR PLAY L terminal of this unit, the Audio Output Right lead to the VCR PLAY R terminal, and the Video Output lead to the VCR PLAY V terminal.

With a video component with the output capability only, you will make connections with one set of leads. Connect the Audio Output Left lead of your video component, such as a Video Disc Player (VDP), to the VDP L terminal, the Audio Output Right lead to the VDP R, and the Video Output lead to the VDP V terminal.

NOTE:

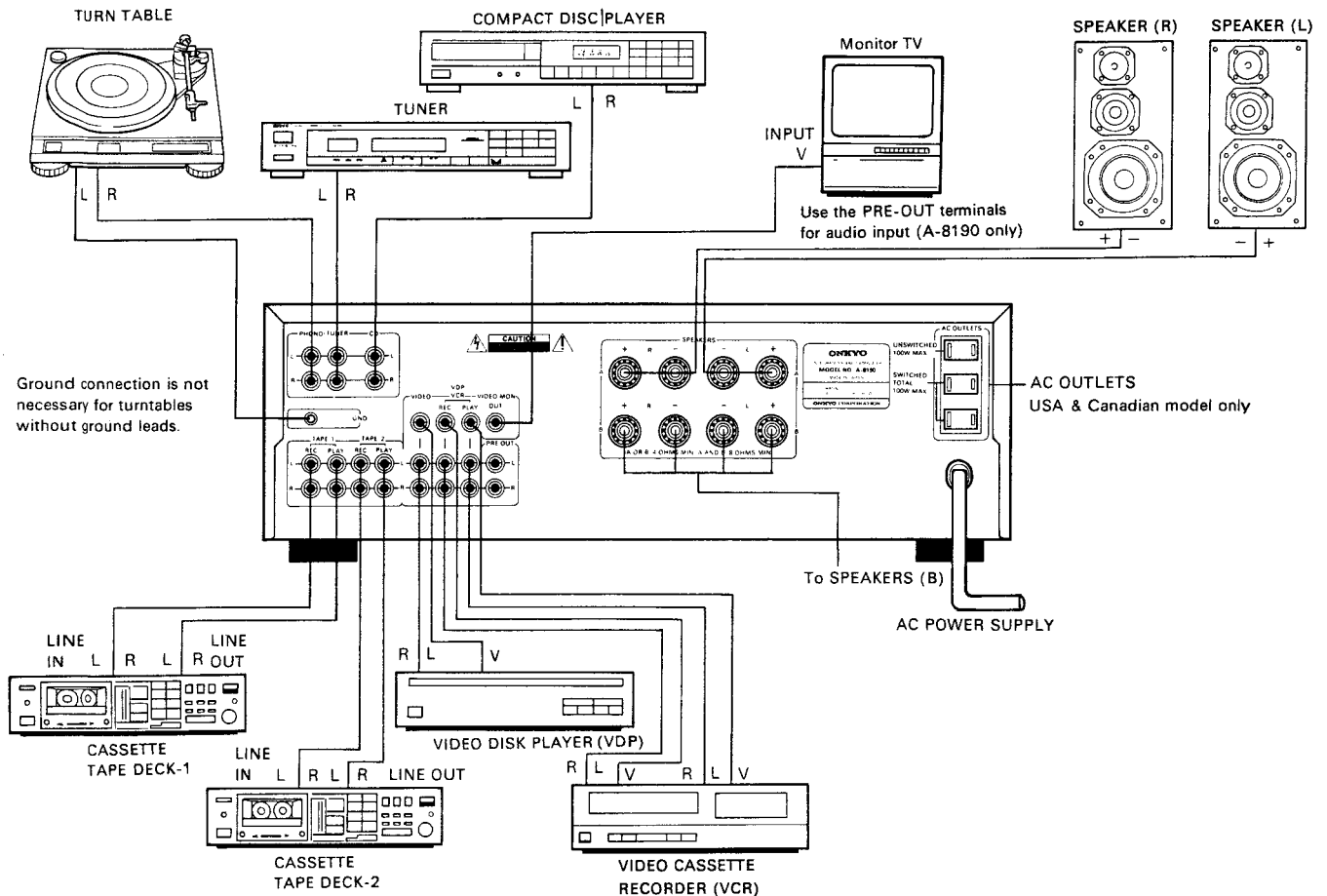
When you make all these connections, be sure to observe the polarity of the audio signal leads, and not to mix the visual signal leads with the audio signal leads.

Monitor TV Connection

A monitor TV set can be connected to the VIDEO MON. OUT terminal.

Pre-Out terminals (A-8190 only)

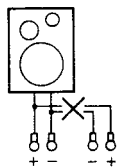
Connect a power amplifier to these terminals when you are using this amplifier as a preamp.



Speaker Connections

When connecting speakers, proper polarity is important. Always connect the (+) terminal (red) on the amplifier to the (+) terminal on the speaker and the (-) terminal (black) on the amplifier to the (-) terminal on the speaker. Two separate pairs of speaker systems can be connected to this unit at once.

- The load impedance of each speaker system connected to this unit must be at least 4 ohms. (A or B—4 ohms min., A and B—8 ohms min.)
- When using only one speaker or when you wish to listen to monaural, the single speaker should never be connected in parallel to both the right and left channel terminals at once.



- Do not use unnecessarily long or extremely thin speaker leads. If the DC resistance of the speaker leads is too high, the damping factor will decrease.

Connecting Speaker Leads to the Speaker Terminals

- Strip off the insulation about 1/2 inch back from the end of the wire.
- When using stranded wire, twist it so that the separate wires will not come unraveled.
- Loosen the speaker terminal fasteners, insert the speaker wire into the side hole of the terminal, and tighten down the fasteners securely.
- Check to make sure that none of the uninsulated copper portion of the cable is exposed.

AC Outlets (USA & Canadian model only)

• UNSWITCHED:

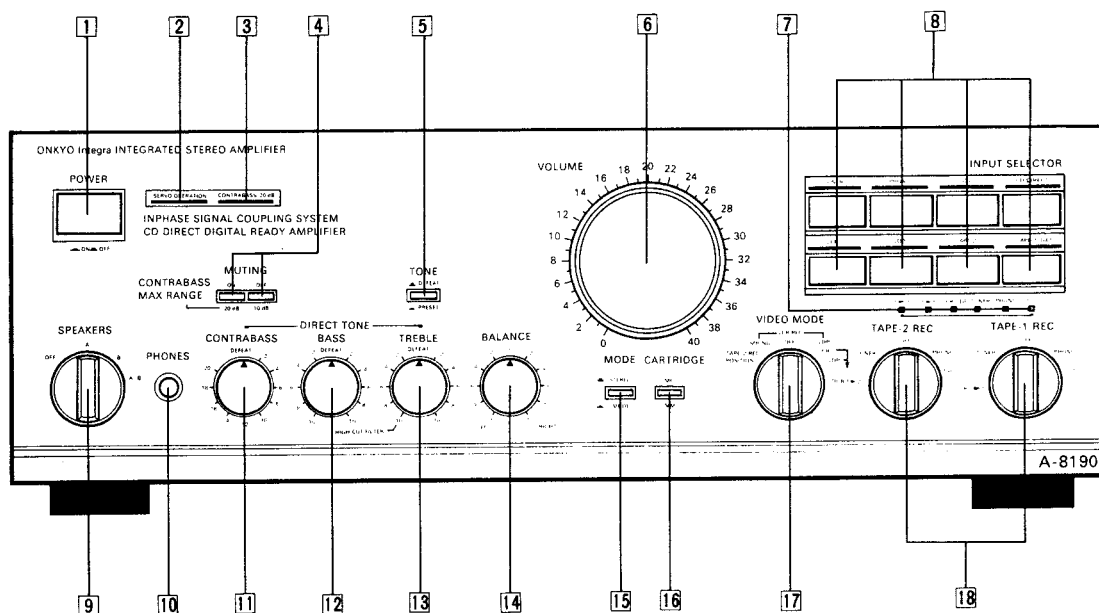
These outlets are not switched on and off by the Power switch on the front panel. Capacity is total 200 watts.

• SWITCHED:

This outlet is switched on and off by the Power switch on the front panel. Capacity is 50 watts.

Front panel facilities

* Front Panel description of A-8190.



1 Power Switch (POWER)

Press once to turn power on and once again to turn power off. An orange band over the power switch indicates power is on.

2 Servo Operation Indicator (SERVO OPERATION)

A few seconds after the power is on, the Servo Operation indicator becomes green to show that the Super Servo circuitry has stabilized. No sound is heard until this indicator becomes green. When a problem such as a shorted output terminal circuit occurs during operation, the indicator goes off. Immediately turn the power off and consult an authorized serviceman.

3 Contra Bass Indicator (CONTRA BASS/20 dB) (A-8190 only)

This indicator comes on when the Muting switch is ON.

4 Muting Switch (MUTING) (5 for A-8170)

Press to obtain volume attenuation by about 1/6 (-15 dB). This is true as long as the volume control is set in the range from 0 to the center position. The attenuation effect becomes less and less as the volume control is turned up in the range beyond the center position (A-8190 only). For the A-8170, when this switch is set to the -20dB position, the volume level is reduced to one-tenth of the level set by the volume control.

5 Tone Switch (TONE) (A-8190 only)

In the Preset position (■) three tone controls are allowed to carry out adjustments: Contra Bass [11], Bass [12] and Treble [13]. In the DEFEAT position (■) tone adjustments are not allowed.

6 Volume Control (VOLUME)

Turn clockwise to increase the volume.

7 Recording Mode Indicators (A-8190 Only)

Indicates the settings of the Recording Source Selectors [18].

NOTE:

If the TAPE-1 selector is set to DUB 2 ► 1 and the TAPE-2 selector is set to DUB 1 ► 2, only the 1 ► 2 indicator will illuminate; the 2 ► 1 indicator will remain off.

8 Input Selector Switches and Indicators (INPUT SELECTOR)

These switches are used to select the desired program source. The buttons are interconnected; depressing one release the previously depressed button, so be sure to press only one button at a time. An indicator shows which program has been selected.

CD DIRECT: Compact disc player connected to the CD terminals, but without effects of the tone and

balance controls, the muting switch and the mode selector.

- CD: The same compact disc player with effects of the tone and balance etc.
- PHONO: Turntable connected to the PHONO terminals.
- TUNER: Tuner connected to the TUNER terminals.
- TAPE-1/DAT: Tape deck connected to the TAPE-1/DAT terminals.
- TAPE-2: Tape deck connected to the TAPE-2 terminals.
- VDP: Video source with the output capability only connected to the VDP terminals.
- VCR: Video source with output and input capabilities connected to the VCR terminals.

NOTE (for VCR and VDP):

Both audio and visual reproduction is possible. For visual reproduction, a monitor or TV set with video input terminals should be used.

9 Speaker Selector (SPEAKERS)

This unit can drive two pairs of speaker systems at once. Use this selector to activate either or both speaker systems connected to the rear panel speaker terminals. In the OFF position, sound is heard only through the headphones.

- OFF: All speakers off—only headphones operate.
- A: Speakers A
- B: Speakers B
- A + B: Both speaker systems A and B.

10 Headphone Jack (PHONES)

Stereo headphones with a standard binaural plug can be connected here.

11 Contra Bass (CONTRA BASS)

From the DEFEAT position, turn right to boost ultra low frequencies to a maximum of +20 dB when the Muting switch [4] is ON or a maximum of +10 dB when the Muting switch is OFF. There is no effect at the DEFEAT position. (A-8190 only).

- * For the A-8170, a maximum boost is +10dB and the Muting switch [4] is not available.

12 Bass Control (BASS)

Turn right to boost or left to attenuate bass. In the DEFEAT position, the bass tone control circuitry is completely bypassed.

13 Treble Control (TREBLE)

Turn right to boost or left to attenuate treble. In the DEFEAT position, the treble tone control circuitry is completely bypassed. When turned to the extreme left (-10), the treble

control acts as a high cut filter to eliminate scratches, hissing and other high frequency noise.

14 Balance Control (BALANCE)

Adjust to control the relative volume level of the left and right speakers or headphones.

15 Mode Selector (MODE)

STEREO: () Position for normal stereo listening.

MONO: () Both right and left channel signals are sent to each speaker. Position for listening to monaural recordings or when adjusting the Balance **14**.

16 Cartridge Selector (CARTRIDGE)

MC (): Turntable using an MC cartridge.

MM (): Turntable using an MM cartridge.

Use the MM position when a step-up transformer is being used with a turntable equipped with an MC cartridge.

17 Video Mode Switch (VIDEO MODE)

With this control, you can select a VCR recording source, a **V** source to the TAPE-1 and TAPE-2 and a BGV (Background video) source.

SOUND: Sends the audio signal from a source selected by the Recording Source Selector (TAPE-2 REC) **18** to the video tape recorder connected to the VCR terminals for recording.

OFF: Set to this position for normal operations other than audio/visual recording, dubbing or BGV (Background Video) playback.

VDP-VCR/
VDP: Sends the audio and visual signal from the video component connected to the VDP terminals to the video tape recorder connected to the VCR terminals for recording (VDP-VCR position only), and also sends the audio signals to the TAPE-1 and TAPE-2 Recording source selector for audio dubbing. The visual signal can be sent to the monitor for BGV playback.

* Refer to "BGV PLAYBACK" on page 6 for details.

18 Recording Source Selectors (TAPE-1 REC, TAPE-2 REC)

This unit is equipped with separate recording source selectors so that the two tape decks can be used to record different program sources at the same time.

DUB 2 ► 1/
1 ► 2: Use either of these settings for tape dubbing operations depending on which deck is being used for playback and which is being used for recording. For details, refer to the Operations section.

V: Select this position for recording the audio signal of a program from video components connected to either the VDP and VCR terminals.

NOTE:

Use the Video Mode switch **17** to select the desired video component.

TUNER: Recording from the tuner.
OFF: When not recording or dubbing.
PHONO: Recording from the turntable.
CD: Recording from the CD player.

Operations

Connect all components to the rear panel terminals as shown in the connections section and set the front panel controls in the appropriate setting to hear the desired program source.

Normal Standby Mode

The standby positions of front panel controls and switches serve as the starting point for all operating modes.

4	Muting Switch	OFF
5	Tone Switch (A-8190 only)	DEFEAT
6	Volume Control	minimum (all the way to the left)
8	Input Selector	as desired
9	Speaker Selector	as desired

11	Contra Bass Control	DEFEAT
12	Bass Control	DEFEAT
13	Treble Control	DEFEAT
14	Balance Control	Center
15	Mode Selector	STEREO
16	Cartridge Selector	as desired
17	Video Mode	OFF
18	Recording Source Selectors	OFF
1	Power Switch	ON

Listening to a compact disc

1. Press the CD or CD DIRECT Input selector **8**.
2. Set the CD player for playback.

NOTE:

In the CD DIRECT position, MODE, BALANCE, TONE CONTROL, and MUTING do not function.

Listening to a record

1. Press the PHONO. Input selector **8**.
2. Set the CARTRIDGE selector **16** to the type of cartridge you are using.
3. Set the record player for playback.

Listening to a broadcast

1. Press the TUNER. Input selector **8**.
2. Set the tuner to receive the broadcast that you want to listen to.

Using video equipment

1. Press the VDP. Input selector **8** to use a video disc player or television tuner connected to the VDP terminals. Press the VCR Input selector **8** to use a video tape recorder connected to the VCR terminals.
2. Set the video equipment for playback.
 - * If a monitor or TV set with video input terminals is connected to the VIDEO MON. OUT terminal, visual reproduction is also possible.

NOTE:

- Rotate the volume knob slowly to find the optimum volume setting.
- Please refer to pages 4 and 5, "Names and Functions of parts," and adjust the sound quality to your own satisfaction, using the contra bass, bass, treble and tone switches. If necessary, you can also use the balance knob and mode switch for fine tuning.

About the Variable Tone Boosting System

This unit designed to gradually reduce the effect of the tone controls (contra bass, bass and treble) as the volume exceeds a certain level. The variable boosting system gradually reduces the boosting effect of the contra bass **11** and bass **12** and treble **13** controls when one or all of these controls is turned beyond (to the right) the center defeat position and the volume control **6** is turned beyond the 20 graduation (the 12  position). When the volume is turned all the way up, the frequency response will be flat again. Volume settings below the 20 graduation have no effect on the tone controls. Also, bass and treble control settings below (to the left of) the center defeat position are not altered by the volume level.

Using Tape Decks

Playback:

Two tape decks can be connected to this unit at once. If the deck connected to the TAPE-1 terminals is to be heard, depress the TAPE-1 selector switch **8**. To listen to the deck connected to the TAPE-2 terminals, depress the TAPE-2 selector switch **8**.

Recording

Set the recording source selector **18** to the **V**, TUNER, PHONO or CD position depending on which one is to be used as the program source, and begin recording operations. If you are recording on a 3-head tape deck, depress the input selector switch **8** corre-

sponding to the tape deck in use to monitor the just-recorded signal. If the input selector [8] is in any other position, another audio source can be heard while recording is in progress. Set the proper recording level using the controls on the tape deck. The effects of the contra bass, bass, treble, and balance controls cannot be heard during recording.

Recording from a Video Source to a Tape Deck

1. Set the Recording source selector [18] of the tape recorder to [V].
2. Select the video mode switch [17] to either the VCR [V] or VDP [V], depending on your video source.
3. Start the tape deck to record.
4. Start the program source.

You can record from a video source and another source at the same time by, for example, setting TAPE-1 to [V] and TAPE-2 to another source.

Recording from an Audio Source to a Video Tape Recorder

1. Set the video mode switch [17] to VCR REC-SOUND.
2. Set the TAPE-2 recording source selector [18] to the source you want to record.
3. Start the video tape recorder to record.
4. Start the program source.

You can record from TAPE-1 to a video tape recorder by changing the TAPE-2 switch to DUB 1 ► 2.

NOTE:

1. If the TAPE-2 switch is set to [V] or OFF, recording is not possible.
2. Recording cannot be done from TAPE-2 to a video tape recorder.

Tape-to-Tape Duplicating

When two tape decks are connected at once to this unit, a tape can be copied from one deck to the other. To copy a pre-recorded tape from tape deck 1 (the deck connected to the rear panel TAPE-1 terminals) to tape deck 2 (connected to the TAPE-2 terminals), perform the following procedure.

1. Place the TAPE-2 recording source selector [18] in the DUB 1 ► 2 position and put tape deck 1 in the playback mode and tape deck 2 in the recording mode. If tape deck 2 is a 3-head deck, the just-recorded signal can be monitored by depressing the TAPE-2 selector switch [8]. To monitor the signal from tape deck 1 before it has been recorded, depress the TAPE-1 selector switch [8]. Depress one of the other input selector switches [8] to listen to the CD player, turntable, tuner or auxiliary component while dubbing is taking place.
2. To copy from tape deck 2 to tape deck 1: Place the TAPE-1 recording source selector [18] in the DUB 2 ► 1 position and put tape deck 1 in the recording mode and tape deck 2 in the playback mode. If tape deck 1 is a 3-head deck, the just-recorded signal can be monitored by depressing the TAPE-1 selector switch [8].

NOTE:

- When the TAPE-1 recording source selector is set to DUB 2 ► 1 and the TAPE-2 recording source selector is set to DUB 1 ► 2, dubbing is possible only from tape deck 1.

VDP to VCR Recording

1. Select the VCR REC-VDP position on the Video Mode switch.
2. Start the VCR unit, in the REC mode, connected to the VCR terminals.
3. Then start recording by activating the video component connected to the VDP terminals.
- To monitor the video program being recorded, on the monitor TV set, press the VCR or VDP switch of the Input Selector. If you want to listen to an audio program while recording a video program, select the desired source by simply pressing the corresponding source switch of the Input Selector.

BGV PLAYBACK (Background Video)

With this unit, you can playback programs on a monitor from a video component connected to the VDP or VCR terminals while playing your turntable, tuner, CD, tape decks.

In this example, you can playback a video program on a monitor by selecting VDP- [V] or VCR- [V] the Video Mode switch [17] while listening to the CD player.

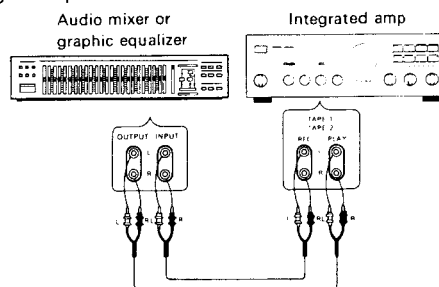
First, select the desired audio component with the Input Selector [8]. Next, select the desired video component by adjusting the Video Mode switch [17] to either the VDP [V] or VCR [V] position.

NOTES:

- When the Video Mode switch is set on VCR REC-VDP- VCR- [V], the video signal from the VCR is sent to the monitor regardless of the Input Selector switch position [8], therefore the playback signal of VCR is not interrupt even if the Input Selector switch [8] is turned to the VDP position.
- If there is no display from the VDP on the monitor in these positions, be sure that both input and output leads are correctly connected between the video components and amplifier, all components are turned power on and the VCR is not playback mode. More importantly, make sure that your VCR is capable of sending out a input signal.

Using a Mixing Console or Graphic Equalizer

A mixing console or graphic equalizer can be connected to the TAPE-1 (or TAPE-2) terminals as shown in the diagram. The input selector is then set to the TAPE-1 (or 2) setting, depending on the terminals to which the mixing console or equalizer is connected and the recording source selector to the program source to be used with mixing or equalization.



To Equalize an Audio Source for Playback

1. Press the TAPE-1 switch of the Input Selector.
2. Select a program source to be equalized on the TAPE-1 REC selector [18] (for example, the CD player).
3. To equalize the audio signal of a video component connected to the VCR or VDP terminals, select the [V] position on the TAPE-1 REC selector [18] and the VCR- [V] or VDP- [V] position on the Video Mode switch [17].

To Record an Equalized Program onto a Tape Deck Connected to the Tape-2 Terminals

1. Select the DUB 1 ► 2 position on the TAPE-2 REC selector [18].
2. Select a program source to be equalized and recorded via the TAPE-1 REC selector [18].
3. To record the equalized audio signal of a video component connected to the VCR or VDP terminals, select the [V] position on the TAPE-1 REC selector [18] and the VCR- [V] or VDP- [V] position on the Video Mode switch [17].

To Record an Equalized Program onto a VCR Connected to the VCR Terminals

1. Select the SOUND REC position on the Video Mode switch [17].
2. Select the DUB 1 ► 2 position on the TAPE-2 REC selector [18].
3. Select a program source to be equalized and recorded via the TAPE-1 REC selector.

NOTE:

Equalized audio dubbing cannot be done directly from the tape deck 2 to the VCR. An equalized signal first has to be routed through other audio source circuitry. Therefore, connect the output leads of the tape deck to the input terminals of an audio source, such as tuner.

Trouble shooting guide

Trouble	Cause	Remedy
No power.	● AC fuse blown.	● Contact Onkyo dealer.
Power on but no sound.	● Bad connections.	● Check input leads, speaker leads, pin plugs, etc.
Hum, low frequency noise.	● Poor or no input ground. ● Poor or no phono motor ground.	● Check outer conductor of input plugs. ● Check for proper ground connection.
Howling when the volume is turned up.	● Turntable and speakers are too close together.	● Move them farther apart.
Rough or scratchy sound. High range is not clear.	● Stylus of pick-up is worn. ● Stylus is dirty. ● Treble control is too high.	● Replace. ● Clean. ● Turn treble control down.

Specifications

	A-8190
Continuous Power Output:	2 x 150 watts at 4 ohms, 1 kHz (DIN) 2 x 115 watts at 8 ohms, 1 kHz (DIN) 100 watts per channel, min. RMS, at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.008% Total harmonic distortion.
Dynamic Power:	2 x 303 watts at 2 ohms, 2 x 235 watts at 4 ohms
Total Harmonic Distortion	0.008% at rated power 0.008% at 1 watt output
Intermodulation Distortion:	0.005% at rated power
Damping Factor:	50 at 8 ohms
Input Sensitivity/ Impedance	Phono (MM): 2.5 mV/50 kohms Phono (MC): 160 μ V/220 ohms CD, DIRECT: 150 mV/50 kohms TUNER: 150 mV/50 kohms Tape Play: 150 mV/50 kohms VCR Play: 150 mV/50 kohms VDP Play: 150 mV/50 kohms
Output Level/Impedance:	Tape Rec: 150 mV/1.5 kohms (Phono) Pre Out: 1 V/600 ohms
Phono Overload:	Phono (MM): 200 mV RMS. at 1 kHz, 0.012% THD.
Tone Control (Vol -20 dB):	CONTRABASS: +10/+20 dB (Muting: OFF/ON) at 20 Hz BASS: $\pm$ 10 dB at 70 Hz TREBLE: $\pm$ 8 dB at 20 kHz
High Cut:	6 kHz (6 dB/Octave) (TREBLE min.)
Frequency Response:	CD, Tuner: 2 Hz-50 kHz (+0, -1 dB)
RIAA Deviation:	Phono (MM): $\pm$ 0.3 dB, 20 Hz -20 kHz
Signal to Noise	Phono (MM): 94 dB (5 mV input)
Ratio (IHF-A):	Phono (MC): 75 dB (0.5 mV input) CD DIRECT: 107 dB
Muting (Vol -20 dB):	-15 dB
Power Supply:	European models: AC220V, 50 Hz Canadian models: AC120V, 60 Hz U.K & Australia models: AC240V, 50 Hz Worldwide models: AC120 and 220V switchable, 50/60 Hz
Dimensions (W x H x D):	435 x 157 x 396 mm 17-1/8" x 6-3/16" x 15-9/16"
Weight:	13.2 kg, 29.1 lbs.

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Continuous Power Output:	2 x 120 watts at 4 ohms, 1 kHz (DIN) 2 x 90 watts at 8 ohms, 1 kHz (DIN) 80 watts per channel, min. RMS, at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.008% Total harmonic distortion.
Dynamic Power:	2 x 210 watts at 2 ohms, 2 x 167 watts at 4 ohms
Total Harmonic Distortion	0.008% at rated power 0.008% at 1 watt output
Intermodulation Distortion:	0.005% at rated power
Damping Factor:	50 at 8 ohms
Input Sensitivity/ Impedance	Phono (MM): 2.5 mV/50 kohms Phono (MC): 160 μ V/220 ohms CD, DIRECT: 150 mV/50 kohms TUNER: 150 mV/50 kohms Tape Play: 150 mV/50 kohms VCR Play: 150 mV/50 kohms VDP Play: 150 mV/50 kohms
Output Level/Impedance:	Tape Rec: 150 mV/1.5 kohms (Phono) Phono Overload: Phono (MM): 200 mV RMS. at 1 kHz, 0.015% THD.
Tone Control (Vol -20 dB):	CONTRABASS: +10 dB at 20 Hz BASS: $\pm$ 10 dB at 70 Hz TREBLE: $\pm$ 8 dB at 20 kHz
High Cut:	6 kHz (6 dB/Octave) (TREBLE min.)
Frequency Response:	CD, Tuner: 2 Hz -50 kHz (+0, -1 dB)
RIAA Deviation:	Phono (MM): $\pm$ 0.3 dB 20 Hz -20 kHz
Signal to Noise	Phono (MM): 93 dB (5 mV input)
Ratio (IHF-A):	Phono (MC): 74 dB (0.5 mV input) CD DIRECT: 107 dB
Muting:	-20 dB
Power Supply:	European models: AC220V, 50 Hz Canadian models: AC120V, 60 Hz U.K & Australia models: AC240V, 50 Hz Worldwide models: AC120 and 220V switchable, 50/60 Hz
Dimensions (W x H x D):	435 x 147 x 388 mm 17-1/8" x 5-13/16" x 15-5/16"
Weight:	11.2 kg, 24.7 lbs

Specifications and features are subject to change without notice.